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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/657,368	09/08/2003	Se-Youn Lim	5000-1-466	9504
33942	7590	07/05/2007		
CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652			EXAMINER PHAM, BRENDA H	
			ART UNIT 2616	PAPER NUMBER
			MAIL DATE 07/05/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

54

Office Action Summary	Application No. 10/657,368	Applicant(s) LIM ET AL.	
	Examiner Brenda Pham	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-20 is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-10, 13 and 14 is/are rejected.
- 7) ☐ Claim(s) 5-6, 11, 12, 15-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/09/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's arguments, filed 05/10/2007, with respect to Restriction Requirement have been fully considered and are persuasive. The Restriction Requirement of 04/09/07 has been withdrawn.
2. Claims 1-20 are currently pending in the application.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Lee et al (US 2002/0051455 A1)** in view of **Iwasaki et al (US 7,020,162 B2)**.

Regarding claims 1, 7, **Iwasaki et al** discloses an E-PON (Ethernet Passive Optical Network) comprising:

an OLT (Optical Line Terminal); and a plurality of ONUs connected to the OLT; said OLT including means for assigning bandwidth to the plurality utilizing one or more logical DBACNs for collecting bandwidth request information from the ONUs and allocating a smaller one of the total requested bandwidth and a total available allocation bandwidth to said plurality of ONUs. (**Iwasaki et al teach "An optical distribution network system includes an OLT; a plurality of ONUs; a first optical network and**

a second optical network, one of which connects the OLT with the plurality of ONUs; and a bandwidth controller. The bandwidth controller apportions the plurality of ONUs between the first optical network and the second optical network, assigns a predetermined transmission bandwidth to each of the plurality of ONUs. See abstract)

Iwasaki et al does not teach allocating request bandwidth based on a priority order of the ONUs.

Lee et al in the same field of endeavor, teach an E-PON (Ethernet Passive Optical Network) comprising:

an OLT (OLT 101 of figure 1); and

a plurality of ONUs (ONU 104) connected to the OLT (OLT 101);

said OLT including means for assigning bandwidth to the plural ONUs utilizing one or more logical DBACN for collecting bandwidth request information from the ONUs and, in priority order of the ONUs, allocating a smaller one of a total requested bandwidth and a total available allocation bandwidth to said plurality of ONUs. ("it is the OLT 101 that implements bandwidth allocation algorithm...The bandwidth for the upstream frame is allocated in priority order to satisfy the QoS considering characteristics of ATM traffic",[0031][0032],[0033] also see figure 7).

It would have been obvious to one skilled in the art at the time of the invention was made to implement the step of allocating request bandwidth to ONUs based on priority order, such as that teach by Lee et al, in Iwasaki et al to maintains QoS given to each traffic, thus improving the efficiency of utilization as well as efficient transmission.

Regarding claim 2, **Iwasaki et al** further teach allocating at least part to said smaller one to at least one of said DBACNs (According to column 9, line 1-17).

Regarding claim 3, **Iwasaki et al** further teach a tree structure wherein the plurality ONUs and the one or more DBACNs are nodes of a tree (see figure 1).

Regarding claim 4, **Iwasaki et al** teach at least some of the DBACNs select from among at least two elements respectively pre-selected from the group that includes the plural ONUs and one or more DBACNs (

5. Claims 8-10, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Lee et al (US 2002/0051455 A1)** in view of **Iwasaki et al (US 7,020,162 B2)** further in view of **Hvostov et al (US 2003/0039211 A1)**.

Regarding claims 8, 9, 10, 13-14, **Lee et al** in view of **Iwasaki et al** disclose all the claim limitation recite in claim 1 (parent claim). DBACN sequentially select one of the plural ONUs at a time, and preferentially allocates a bandwidth to the selected one is missing in **Lee et al** in view of **Iwasaki et al**. **Hvostov et al** teach this limitation (according to [0033] "If voice is to be transmitted by an ONU, the algorithm processor will typically guarantee periodic slot times necessary to carry the voice signal without any audible delay. If the class of traffic is the best effort class, the algorithm processor may only provide whatever time interval is remaining

between allocation request intervals after higher priority traffic has been assigned slot times.”)

Allowable Subject Matter

6. Claims 5, 6, 11, 12, 15-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 18-20 are allowed over prior art made of record.

The following is an examiner's statement of reasons for allowance: the prior arts made of record do not teach or fairly suggests in combination a DBA (Dynamic Bandwidth Allocation) method employing a tree algorithm in a E-PON including an OLT and a plurality of ONUs connected to the OLT, the DBA method being based on steps comprising:

arranging a plurality of logical DBA Control Nodes (DBACNs) in hierarchical stages of a tree with the ONUs being positioned in a lowermost stage thereof, and connecting DBACNs or ONUs positioned in an intermediate stage to a DBACN positioned in a stage higher than that intermediate stage; sequentially performing a process of causing a DBACN to collect bandwidth request information inputted from DBACNs or ONUs connected thereto from a lower stage, starting from a lowermost DBACN up to an uppermost DBACN in the hierarchy; causing the uppermost DBACN to allocate a smaller one of a total available allocation-bandwidth and a total requested

Art Unit: 2616

bandwidth to DBACNs connected thereto from a lower stage in a priority order of said DBACNs connected thereto form a lower stage; and causing DBACNs positioned in stages below that of the uppermost DBACN to each allocate a bandwidth allocated by a DBACN connected thereto from a higher stage to DBACNs or ONUs connected thereto from a lower stage in a priority order of said DBACN or ONUs connected thereto from a lower stage.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

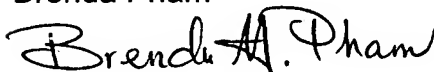
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brenda Pham whose telephone number is (571) 272-3135. The examiner can normally be reached on Monday-Friday from 9:00 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn D. Feild, can be reached on (571) 272-2092.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.

June 28, 2007

Brenda Pham



BRENDA PHAM
PRIMARY EXAMINER